

REMARKS

Claims 10-21 are pending in the Application. Claims 1-9 have been canceled from the application without prejudice and replaced with new claims 10-21. An Abstract has been added to the application by way of this amendment. The specification has been amended in response to the Examiner's drawing rejections and in order to (1) clarify what it is that the Applicants regard as their invention; and (2) to ensure that the specification and figures correspond; and (3) to remove superfluous subject matter from the specification. Figure 1 has been amended as required by the Examiner to show features of the invention set forth in the specification and claims. No new matter has been added to the drawings, the specification or claims by way of any of these amendments.

The Examiner's grounds for objecting to and/or rejecting the application are traversed or are overcome as set forth below.

I. THE DRAWING OBJECTION

The Examiner objected the drawings under 37 CFR 1.83(a). The Examiner explained that the drawings must show "fuel tank, means to provide a hydrocarbon fuel, connection means, hydrogen peroxide tank and decomposition chamber" or those features must be cancelled from the claims.

The Examiner's objection has been overcome by amending the drawings to include hydrogen peroxide tank (2), hydrocarbon fuel tank (3) connected to the decomposition and combustion chamber. Moreover the specification has been amended to identify numeral 5 as a decomposition and combustion chamber/nozzle (5) This amendment to the specification finds support in the description of the bipropellant invention embodiment at pages 4-5 of the specification attached as Appendix A to this Reply and does not add new matter to the application.

II. THE CLAIM OBJECTIONS

The Examiner objected to the claims on several grounds. The Examiner's claim objections have been overcome as set forth below.

Item 2. The Examiner notes that only nine claims were included in the Preliminary Amendment. The Applicants acknowledge that the Preliminary Amendment included only nine claims and have added new claims to the application in this Reply starting with claim number 10.

Items 3-10. In paragraphs 3-10, the Examiner objected to language used in several of the application claims. The Examiner's objection has been overcome by canceling claims 1-9 from the application and by replacing the cancelled claims with new claims 10-21.

III. THE SPECIFICATION OBJECTIONS

A. Specification Format

The Examiner objected to the specification because the spacing of the lines in the specification makes reading and entry of amendments difficult.

The Applicants have overcome this objection by including a double-spaced copy of the application specification and originally filed claims as Appendix A to this Reply.

B. The Abstract

The Examiner objected to the specification because it does not contain an abstract.

This objection is overcome by adding an abstract to the application in this Reply.

C. Section Headings

The Examiner objected to the specification because section headings were missing. The specification has been amended above to add the section headings. Moreover, the Applicants have amended the specification to more clearly identify what it is that the Applicants regard as their invention. No new matter has been added to the specification by way of these amendments. The Applicants have attached a clean copy of the amended specification to this Reply as Appendix B.

IV. TRAVERSE OF THE ANTICIPATION REJECTION

The Examiner rejected claims 1-9 as being anticipated by Kosaka et al. (USP 4,059,415). It is the Examiner's position that Kosaka et al. teaches an apparatus that includes a fuel tank, a hydrogen peroxide tank, a decomposition chamber and a nozzle. Moreover, it is the Examiner's position that the methods of claims 4-9 are inherently performed by the Kosaka et al. invention.

The invention set forth in claims 10-21 include features not disclosed or suggested by Kosaka et al. Specifically, Kosaka et al. does not disclose an "engine" as claimed. Moreover, Kosaka et al. does not meet the structural limitation in the claims that the products of the decomposition and combustion chamber exit the nozzle. For at least these reasons, pending claims 10-21 are patentable over the prior art of record.

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A. Kosaka et al. Does Not Disclose An Engine

The apparatus in of Kosaka et al. and specifically, Figure 2 of Kosaka et al. is not an engine. On the contrary, the opening paragraph of Kosaka et al. states that the invention is not a propulsion device but, is, instead “a fuel-reforming apparatus for preparing a gaseous fuel... by incomplete combustion of a hydrocarbon or carbon fuel with the decomposition product of hydrogen peroxide”. The fuel (reformed gas) which it prepares may subsequently be used in a combustion engine, as indicated at column 4, lines 53-54, but that engine is specifically indicated as “not shown” and there is no question of the illustrated apparatus itself functioning as an engine. Because Kosaka et al. does not disclose microengines alone or incorporated into micro air vehicles, the reference does not anticipate the claimed invention. *

B. Kosaka et al. Does Not Disclose A Device Wherein The Product Of The Decomposition And Combustion Chamber Exit A Nozzle

Regardless of its purpose, the Kosaka et al. apparatus fails to disclose every feature of the claimed invention. It is a feature of every pending claim that the products of decomposition and combustion (a bipropellant) exit through the nozzle. In Kosaka et al, however, nozzle 42 is located downstream of the decomposition reactor 20 but upstream of the chamber 10 where combustion takes place. Therefore, the nozzle is not used as the exit of the combustion products. As a result, Kosaka et al. does not anticipate any claim of the presently claimed invention.

C. Kosaka et al. Does Not Disclose Micro Engines

Furthermore, the present invention relates specifically to a micro engine, micro air vehicle and method of propelling the same. There is absolutely no teaching by Kosaka et al of the application of their invention to micro machinery. As a result, claims 10-21 are not anticipated by Kosaka et al. for this reason as well.

CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that presently pending claims 10-21 are patentable over the art of record in this case. An early notice thereof is, therefore, earnestly solicited.

Respectfully submitted,

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